

Healthcare Preparedness for an Influenza Pandemic Response

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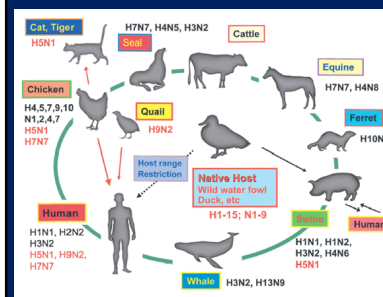
What is Influenza?

- The flu (influenza) is a contagious respiratory illness caused by influenza viruses. It can cause mild to severe illness.
- Symptoms of flu include fever, headache, extreme tiredness, dry cough, sore throat, runny or stuffy nose, and muscle aches.
- The best way to prevent this illness is by getting a flu **vaccination** each fall.

Types of Influenza A Viruses

- Different types of Influenza A are identified by combinations of proteins on the surface of the virus
 - 16 H types
 - 9 N types
- Human types – H1N1, H1N2, H3N2
- H5 and H7 can cause dangerous forms

Transmission of Influenza A between animals and people



- Certain subtypes are specific to certain species
- Influenza A viruses normally seen in one species can cross over and cause illness in another species
- Influenza transmitted in 2 ways:
 1. Directly from swine or swine virus-contaminated environments to people
 2. Person to person transmission

From: MedicalEcology.org

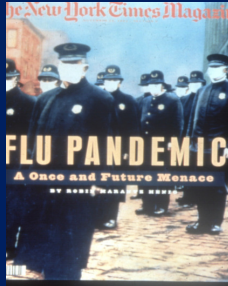
H1N1

- A pig is infected with a human and swine influenza A viruses at the same time; a new virus could mix existing genetic information and have some genes from the human virus and some from the swine virus
- The resulting new virus might be able to infect humans and spread from person to person, but the surface proteins would not be previously seen in influenza viruses that have infected humans.
- Most people would have little or not immune protection against new influenza A virus.

What is a Pandemic?

- Worldwide outbreak of a new influenza virus
- 1918- Spanish Flu- 500,000 (H1N1)
- 1957- Asian Flu- 70,000 (H2N2)
- 1968- Hong Kong Flu- 34,000 (H3N2)
- 2009- Novel Swine Origin Influenza (H1N1)

The 1918 Flu Pandemic

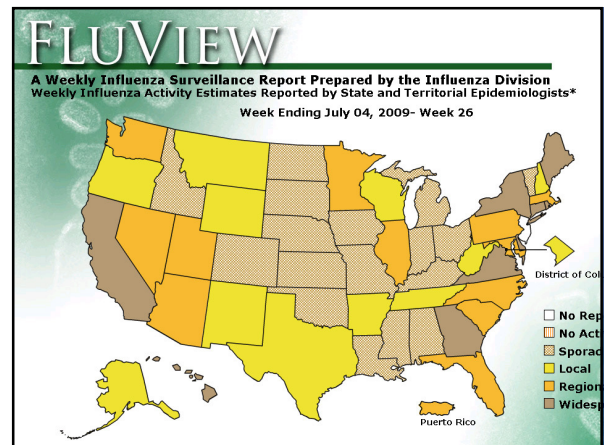


The 1918 Flu Pandemic



H1N1 Risks to Human Health

- Concern that virus could mutate to become highly infectious in humans and spread from person to person
 - WHO Pandemic Phase 6
- H1N1 spreads easily from swine to humans; human to human transmission has occurred



Influenza Planning in Georgia

- Underway since late 1995
- Annual response to a typical season is good preparation for an outbreak
- Planning useful for public health emergencies and other disasters
- Drills and exercises with community partners

Atlanta Community Preparedness

- Metro Medical Response System (MMRS)
 - Healthcare Section
 - Metrowide healthcare emergency preparedness
 - After 911, Anthrax, Smallpox, SARS
 - Allocation of Homeland Security \$\$

MMRS

- Fulton, Dekalb, Clayton, Gwinnett, Douglas, Paulding, Newton (GEMA 7)
- Georgia Division of Public Health
- District Bioterrorism Prep Coordinators
- Fire, Police, EMS, GEMA, FMEA
- Georgia Hospital Association
- National Disaster Medical System
- American Red Cross
- Hospital Personnel-MD, RN, Administrators
- Airport Quarantine

The Office of Critical Event Preparedness and Response (CEPAR) at Emory

- Bridge existing operational, educational and research activities of Emory relevant to planning, response, mitigation and recovery from catastrophic events
- Exercise all the relative components of the Emory enterprise in delivering an orchestrated response to a catastrophic event
- Catalyze development of novel, multi-disciplinary solutions for the mitigation of threats
- Enhance opportunities for enterprise-wide collaboration
- Enhance collaboration with community partners

Healthcare Emergency Planning

- Hospital Surge Capacity
 - Staffed beds
 - Procedure beds
 - Space adapted for inpatient care
- State Resources
 - 50 bed portable “hospitals” (1 in each district)
 - District trauma trailer

Healthcare Emergency Planning

- Healthcare Facilities
 - Stockpile of antiviral drugs
 - Stockpile of masks, gowns and gloves
 - Aggressively vaccinating employees
 - Preparing contingency plans
 - Lab surveillance to identify types of influenza
 - Electronic state reporting mechanisms
 - Cough/respiratory hygiene
 - Monitoring travel history (patients and staff)
 - Patient management
 - Physical plant issues
 - Education
 - Communication



Stockpile of Antiretroviral Drugs

For patients with influenza and ill HCW & EMS providers

Calculation:

of persons who would be hospitalized at Emory Healthcare

1. Estimated hospitalized persons in the state over a twelve week period calculated for a moderate pandemic using CDC FluSurge 1.0 software
2. Calculated EHC market share in the state would lead us to treat approximately 2000 patients

Stockpile of Antiretroviral Drugs

Calculation:

HCW 9,300 employees + 1000 physicians + 1000 house officers

1. 11,300 persons
2. Attack rate was 25% then 2,825 treatment courses

Total treatment courses for EHC 5000 tx. courses of oseltamivir

National Strategic Stockpile

Stockpile of Personal Protective Equipment (PPE)

Used FluSurge 1.0 and FluAID

(CDC pandemic modeling software)

- Treat approximately 2,000 patients
- Vaccines likely to be in short supply early in a pandemic
- Average length of non-ICU influenza related illness (ILI) days will be about 5 days
- Average length of ICU stay for ILI is 10 days
- Average proportion of admissions for ILI is 15% (CDC)
- Each HCW will have a new N95 before each shift
- Each patient will have 84 patient encounters by 8 HCW during a 24 hour period

Stockpile of PPE

1,700 pts admitted to non-ICU for a total of 8,500 patient days

300 pts admitted to ICU for a total of 3,000 patient days

11,500 patient days with 8 HCW/day = 92,000 N95s

Today at EHC 117,680 N95

68,180 isolation gowns (62,500 more)

25,000 surgical masks (15,000 more) 20K WH

62,500 pairs of gloves (75,000 more)

Emergency Planning

- State
 - Stockpile of portable ventilators
 - Stockpile N95 respirators
 - CHEMPACK deployment
 - Manage Strategic National Stockpiles – 12 caches in US




Patient Safety Index – Influenza Vaccination Final Results

ECLH – 70%	
EUH – 72.4%	
TEC – 70%	EHC – 71.2%
EHI – 81.4%	
WWC – 69.4%	
ECC – 65.7%	

EMORY HEALTHCARE

Laboratory Surveillance

Influenza Surveillance (weekly during influenza season)

Samples: EUHM, EUH, Outpatient, Student Health

Negative

Insufficient cells

Parainfluenza

Adenovirus

Influenza A

Influenza B

RSV

Resp screen + (NFI)

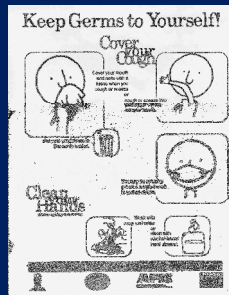
Daily starting April 27, 2009 Para flu outbreak on BMT unit

Electronic State Reporting Mechanisms

H1N1 immediately notifiable for appropriate lab testing at Georgia Public Health Lab

CDC always in the background in Atlanta

Cough/ Respiratory Hygiene



Monitoring Travel History (Patients and Staff)

Important early to help establish epi curve
May not be useful when widespread person-to-person transmission is ongoing
Manage staff through Employee Occupational Health with Hospital Epidemiologist oversight
Manage patients with ID consult service

Patient Management

Single patient room
Airborne infection isolation room (AIIR) for aerosol-generating procedures
N95 respirators with additional PPE (CDC recommendations)
Limit and plan patient movement
When AIIR rooms exhausted consider cohort
Contingency planning (external triage, antiretroviral management, etc)

Physical Plant Issues

Air handling: AIIR, negative pressure, HEPA
Environmental decontamination
Reprocessing patient care equipment
Linen
Food management

Education

Infection Preventionist to educate staff on all elements pertaining to pandemic etiology
Use MD spokesperson and Administration to assist with education

Communication

Biggest challenge
Include all levels and disciplines
Single voice of truth
Include media
Policies and procedures readily available
Established a webpage
Must include knowledge experts and Administration

